

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (currently amended) High-strength steel sheet excellent in hole-expandability and ductility, characterized by;

comprising, in mass%,

C: not less than 0.01 % and not more than 0.20 %,

Si: not more than 1.5 %,

Al: not more than 1.5 %,

Mn: not less than 0.5 % and not more than 3.5 %,

P: not more than 0.2 %,

S: not less than 0.0005 % and not more than 0.009 %,

N: not more than 0.009 %,

Mg: not less than 0.0006 % and not more than 0.01 %,

O: not more than 0.005 % and

Ti: not less than 0.01 % and not more than 0.20 % and/or

Nb: not less than 0.01 % and not more than 0.10 %,

with the balance being iron and unavoidable impurities,

having the Mn%, Mg%, S% and O% satisfying equations (1) to (3), the Al% and Si% satisfying equation (4), and the Ti%, C%, Mn% and Nb% satisfying equations (5) to (7),

having a strength exceeding 980 N/mm², and

having the structure primarily comprising ~~one or more of ferrite, bainite and martensite~~,

~~containing not less than 5.0×10^2 per square millimeter and not more than 1.0×10^7 per square millimeter of composite precipitates of MgO, MgS and (Nb, Ti)N of not smaller than 0.05 μm and not larger than 3.0 μm ;~~

$$[\text{Mg}\%] \geq ([\text{O}\%]/16 \times 0.8) \times 24 \quad \dots (1)$$

$$[\text{S}\%] \leq ([\text{Mg}\%]/24 - [\text{O}\%]/16 \times 0.8 + 0.00012) \times 32 \quad \dots (2)$$

$$[\text{S}\%] \leq 0.0075/[\text{Mn}\%] \quad \dots (3)$$

$$[\text{Si}\%] + 2.2 \times [\text{Al}\%] \geq 0.35 \quad \dots (4)$$

$$0.9 \leq 48/12 \times [\text{C}\%]/[\text{Ti}\%] < 1.7 \quad \dots (5)$$

$$50227 \times [\text{C}\%] - 4479 \times [\text{Mn}\%] > -9860 \quad \dots (6)$$

$$811 \times [\text{C}\%] + 135 \times [\text{Mn}\%] + 602 \times [\text{Ti}\%] + 794 \times [\text{Nb}\%] > 465 \quad \dots (7)$$

2-8: (canceled).

9. (currently amended) High-strength steel sheet excellent in hole-expandability and ductility described in claim 4, characterized by;

comprising, in mass%,

C: not less than 0.01 % and not more than 0.20 %,

Si: not more than 1.5 %,

Al: not more than 1.5 %,

Mn: not less than 0.5 % and not more than 3.5 %,

P: not more than 0.2 %,

S: not less than 0.0005 % and not more than 0.009 %,

N: not more than 0.009 %,

Mg: not less than 0.0006 % and not more than 0.01 %,

O: not more than 0.005 % and

Ti: not less than 0.01 % and not more than 0.20 % and/or

Nb: not less than 0.01 % and not more than 0.10 %,

with the balance being iron and unavoidable impurities,

having the Mn%, Mg%, S% and O% satisfying equations (1) to (3), the Al%
and Si% satisfying equation (4), and the C%, Si%, Mn% and Al% satisfying equation (8),

having the structure primarily comprising ferrite and bainite, and

having the strength exceeding 590 N/mm²

$$[\text{Mg}\%] \geq ([\text{O}\%]/16 \times 0.8) \times 24 \quad \dots (1)$$

$$[\text{S}\%] \leq ([\text{Mg}\%]/24 - [\text{O}\%]/16 \times 0.8 + 0.00012) \times 32 \quad \dots (2)$$

$$[\text{S}\%] \leq 0.0075/[\text{Mn}\%] \quad \dots (3)$$

$$[\text{Si}\%] + 2.2 \times [\text{Al}\%] \geq 0.35 \quad \dots (4)$$

$$-100 \leq -300[\text{C}\%] + 105[\text{Si}\%] - 95[\text{Mn}\%] + 233[\text{Al}\%] \quad \dots (8).$$

10. (original) High-strength steel sheet excellent in hole-expandability and ductility described in claim 9, characterized in that;

not less than 80 % of crystal grains having a short diameter (ds) to long diameter (dl) ratio (ds/dl) of not less than 0.1 exist in the steel structure.

11. (original). High-strength steel sheet excellent in hole-expandability and ductility described in claim 10, characterized in that;

not less than 80 % of ferrite crystal grains having a diameter of not less than 2 μm exist in the steel structure.

12-15. (canceled).

16. (new) High-strength steel sheet excellent in hole-expandability and ductility described in claim 1, characterized in that

containing not less than 5.0×10^2 per square millimeter and not more than 1.0×10^7 per square millimeter of composite precipitates of MgO, MgS and (Nb, Ti)N of not smaller than $0.05 \mu\text{m}$ and not larger than $3.0\mu\text{m}$.

17. (new) High-strength steel sheet excellent in hole-expandability and ductility described in claim 9, characterized in that

containing not less than 5.0×10^2 per square millimeter and not more than 1.0×10^7 per square millimeter of composite precipitates of MgO, MgS and (Nb, Ti)N of not smaller than $0.05 \mu\text{m}$ and not larger than $3.0\mu\text{m}$.

18. (new) High-strength steel sheet excellent in hole-expandability and ductility described in claim 9, characterized in that

having a hole-expandability λ (%) satisfying the following equation

$$\lambda (\%) \geq -0.134 \times \text{TS (N/mm}^2\text{)} + 222$$

wherein TS is tensile strength.